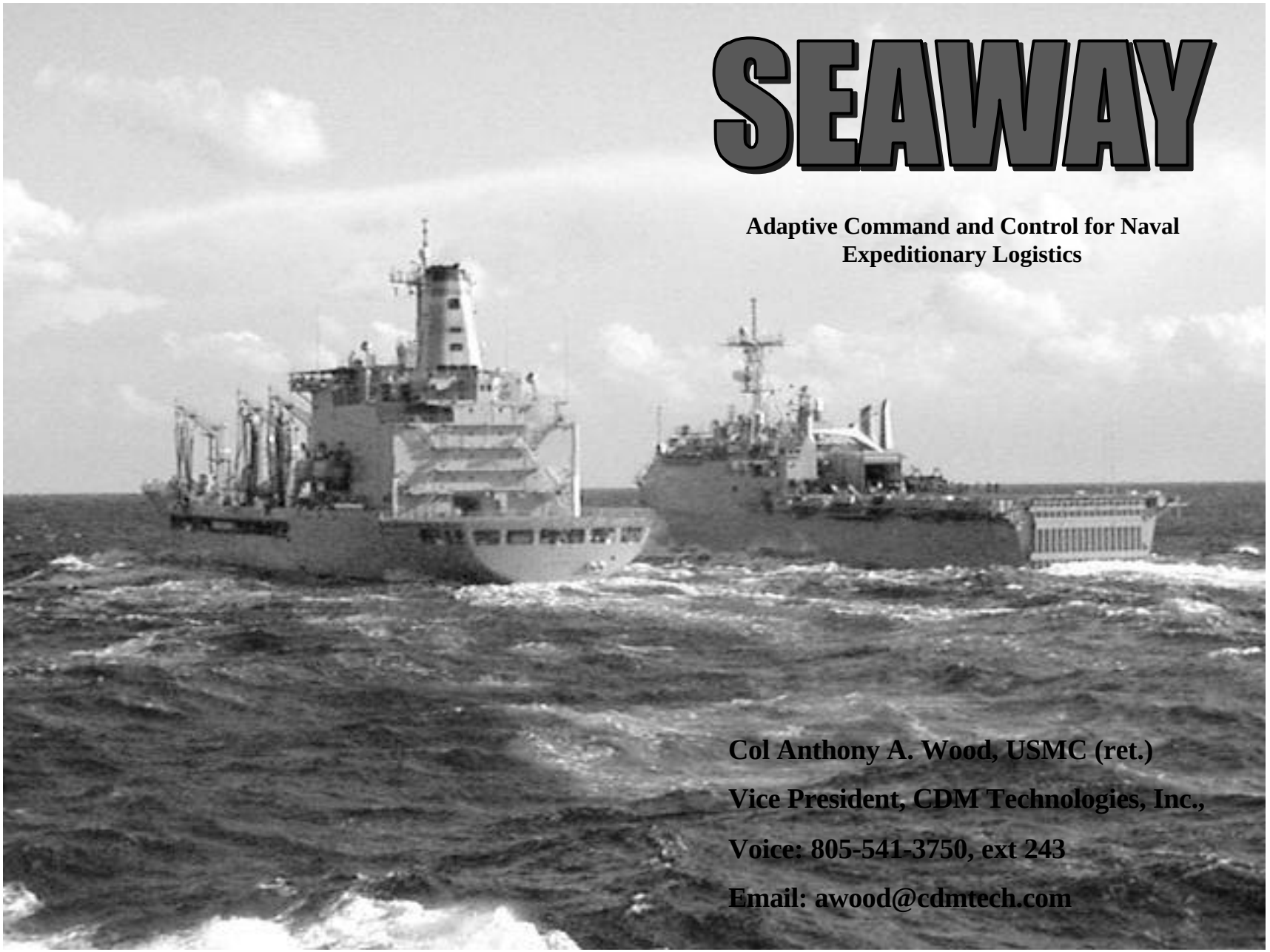

SEAWAY

Adaptive Command and Control for Naval Expeditionary Logistics

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SEAWAY
TENSIONS
CONTAINERIZATION
MOBILITY
PACKAGING
CSS EMPLOYMENT
TRANSPARENCY
"CRITICALS"
CONTRIBUTION
MARITIME LOG
SEA BA
DECISION SUPPORT FOR JV2010
ATION TOOL
TIMELINE
VERSION 1 DEVEL
EXPERIMENTING

Emerging Joint Doctrine: Post Cold War Expeditionary Force Characteristics…and Logistic Implications

Characteristics:

Agility

Flexibility (entry, subsequent operations)

Mobility (dependence on fixed facilities, routes, etc)

Offensive (no defensive tether)

Sea based…

Implications for Naval Expeditionary Warfare

Supply directly to using units (know locations, CTP, current status)

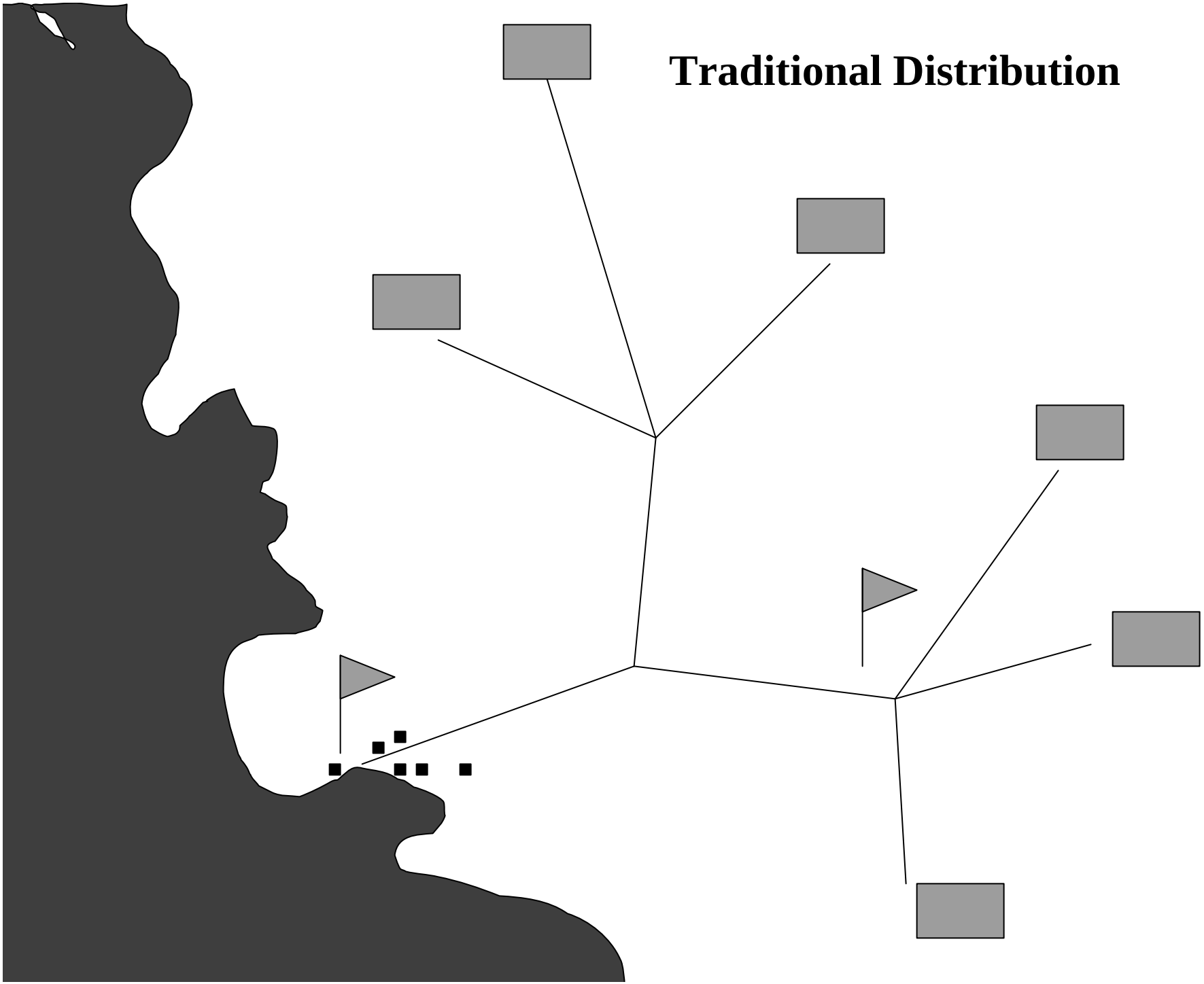
Deliver inland (helicopter umbilical, opportunity cost, alternatives)

Limit "custom" missions (standard supply packages, "push-and-pull")

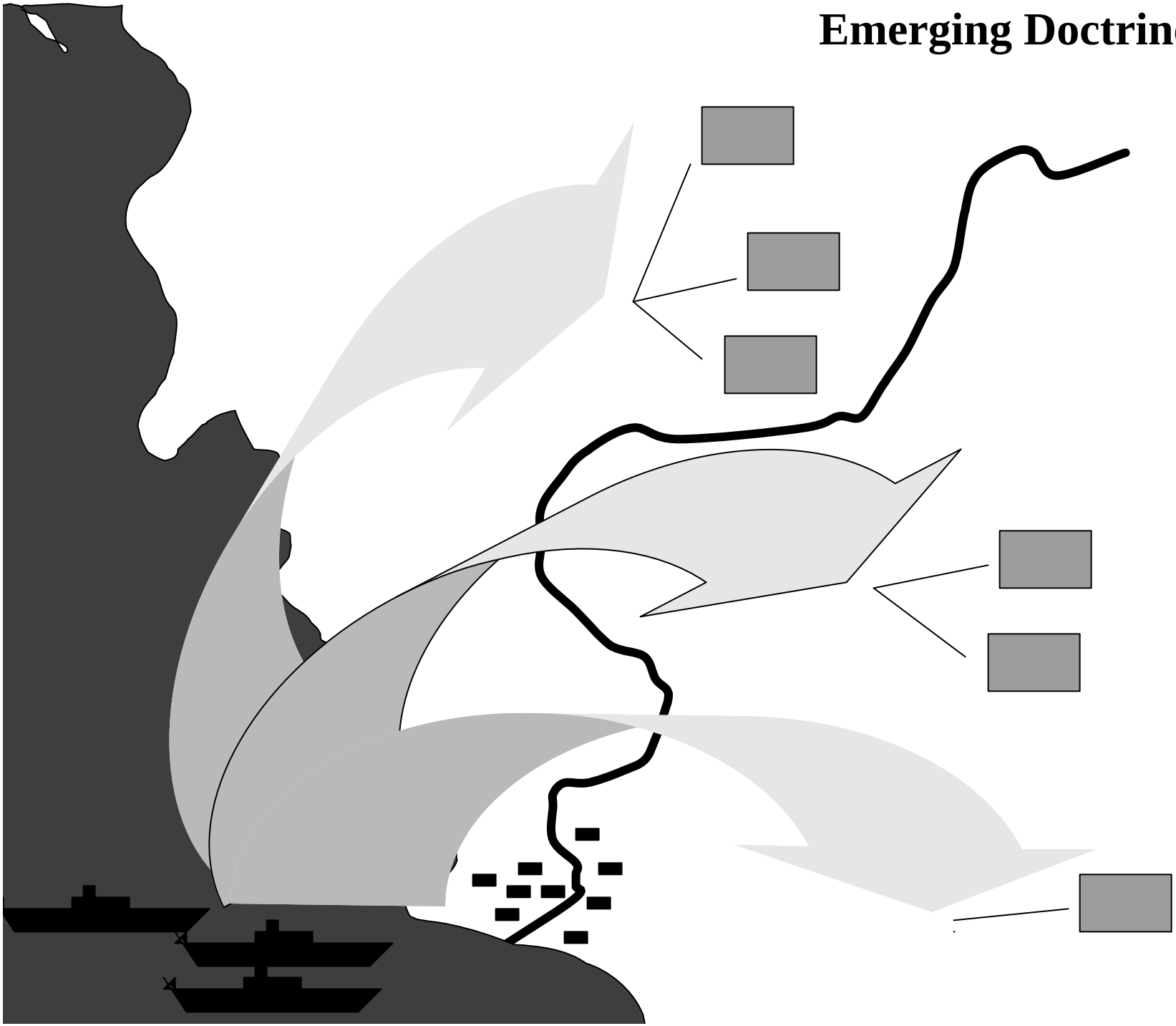
Rapid response to change (responsive logistic C2, supply stream projection, flexible sea base cargo management capabilities, distributed coordinating tools)

Smooth Transition to JLOTS, etc (same tools, data, decision support)

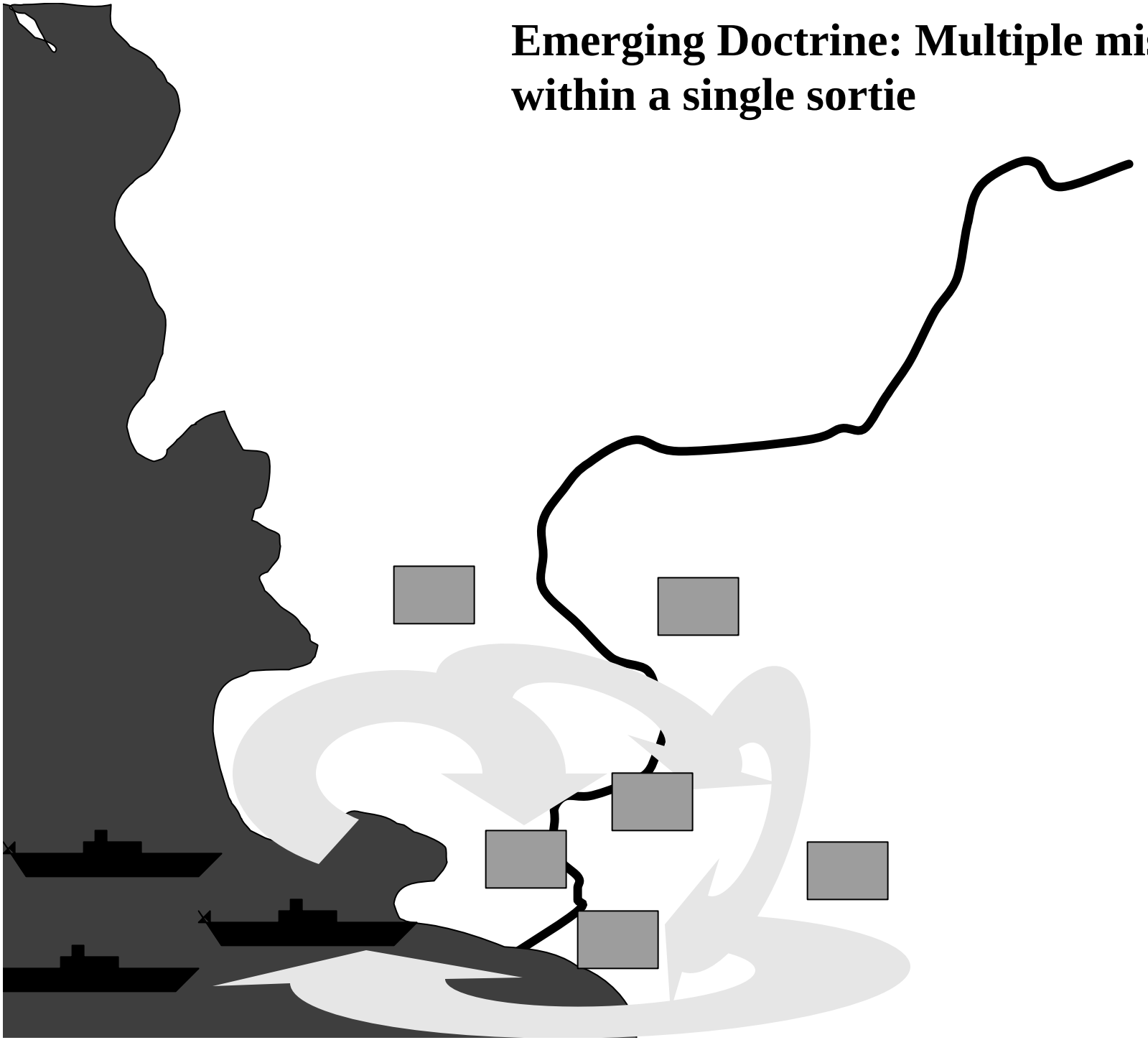
Traditional Distribution



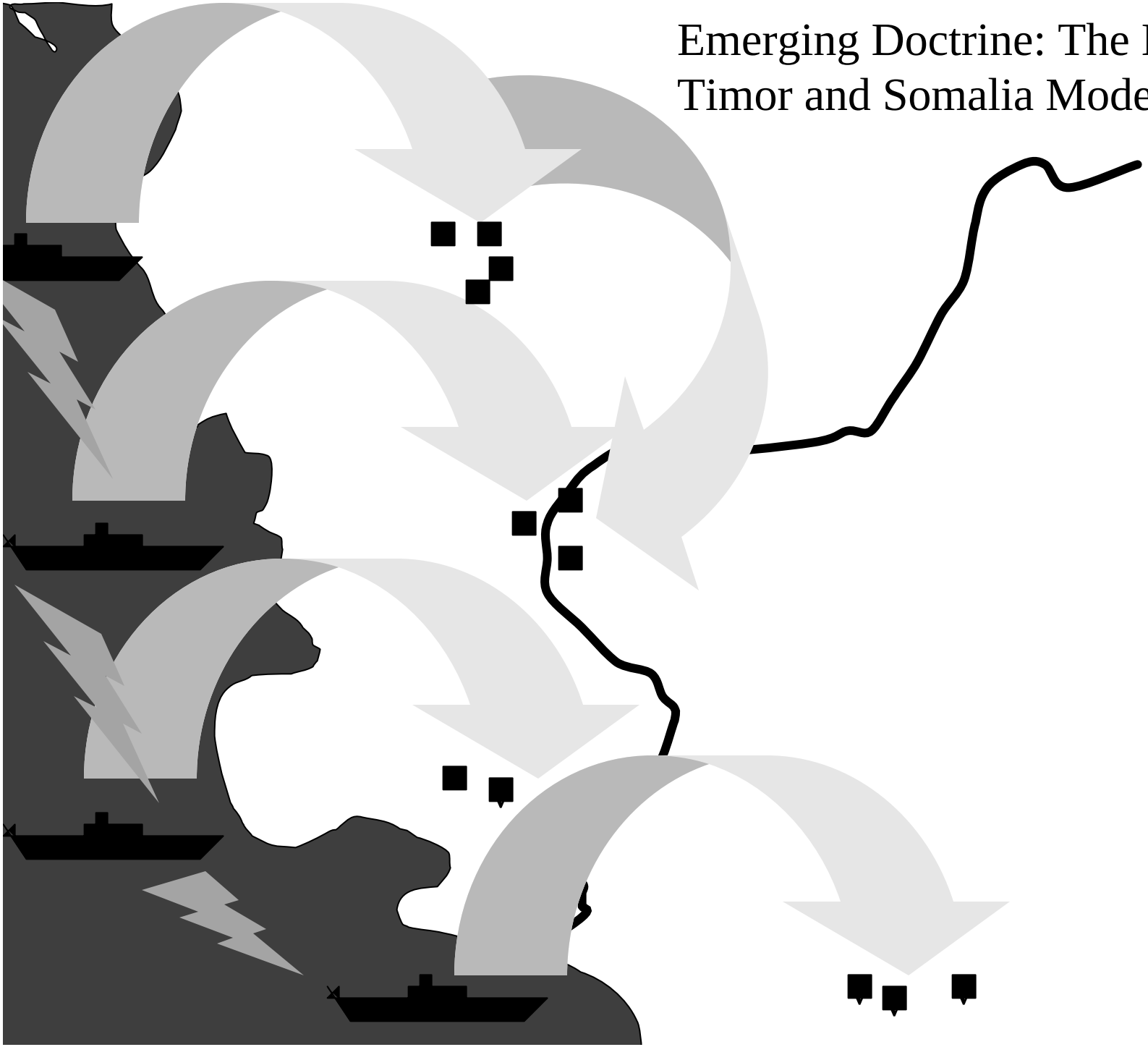
Emerging Doctrine



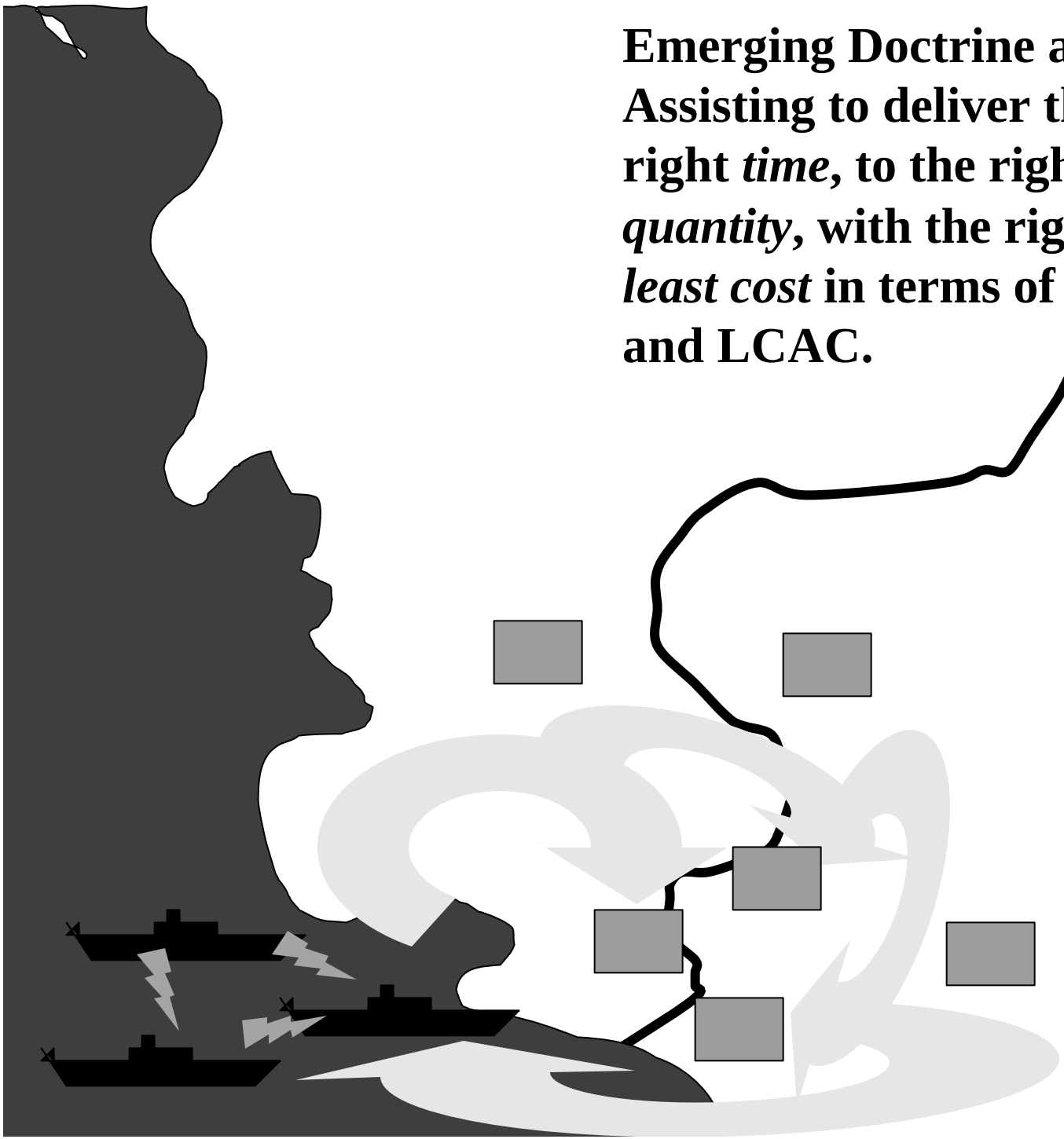
Emerging Doctrine: Multiple missions within a single sortie



Emerging Doctrine: The East Timor and Somalia Model



Emerging Doctrine and SEAWAY: Assisting to deliver the right *thing*, at the right *time*, to the right *unit*, in the right *quantity*, with the right *packaging* …*at least cost* in terms of MV-22, CH-53E, and LCAC.



Implications for Naval Expeditionary Warfare

Supply directly to using units (know locations, CTP, current status, weather)

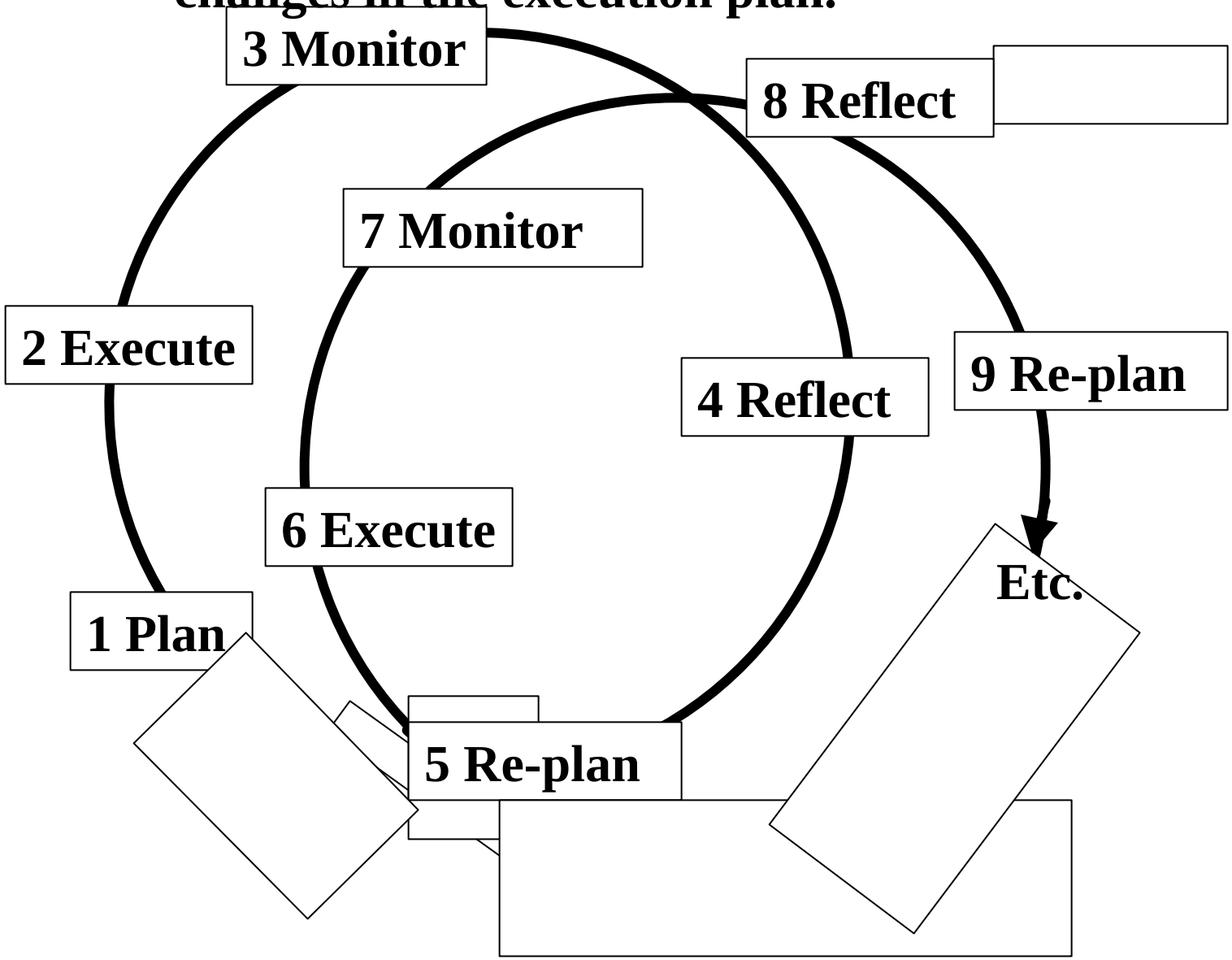
Deliver inland (primary helicopter umbilical, opportunity cost, alternatives)

Limit "custom" missions (standard supply packages, "push-and-pull")

Rapid response to change (responsive logistic C2, supply stream projection, flexible sea base cargo management capabilities, distributed coordinating tools)

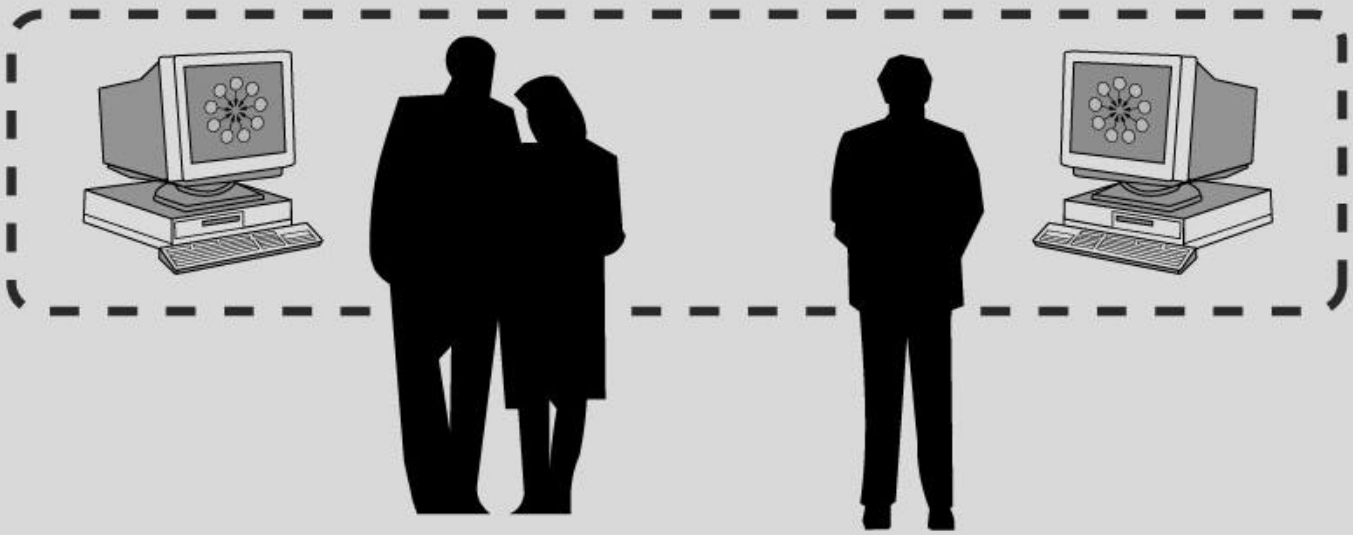
Smooth Transition to JLOTS, etc (same tools, data, decision support)

SEAWAY assists by monitoring changes in the situation, providing alerts and warnings, and proposing appropriate changes in the execution plan.

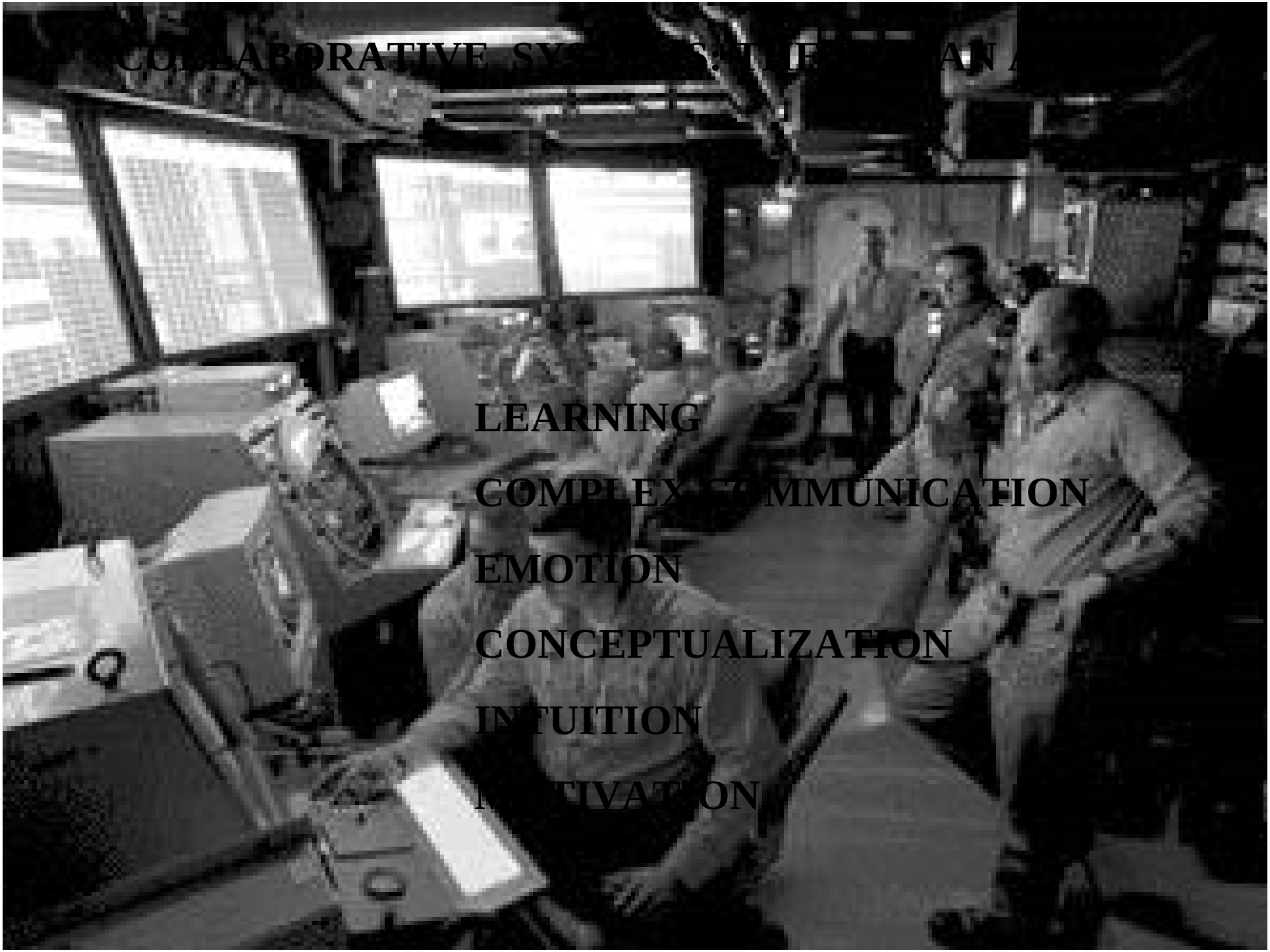


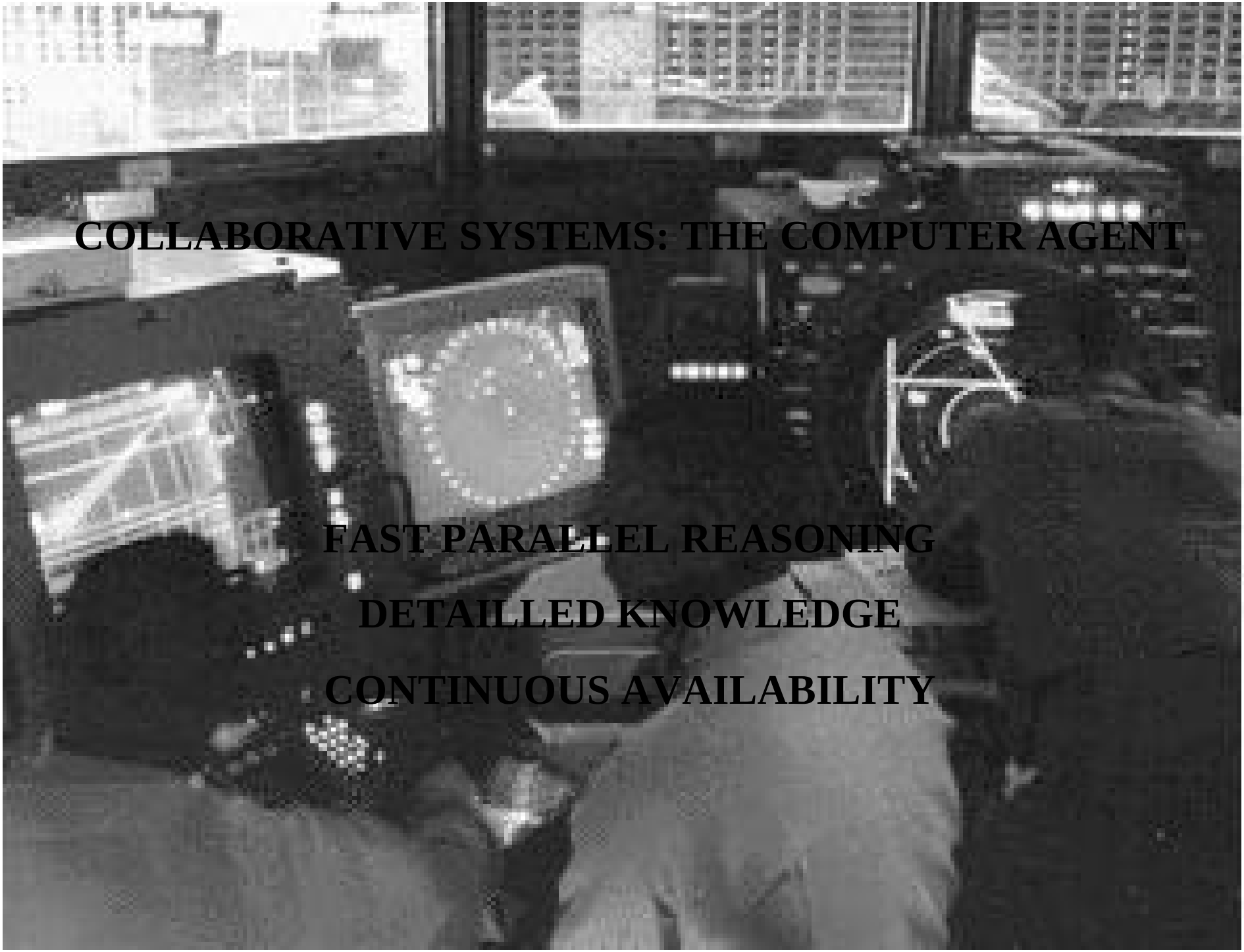
Agent Technology:

The Basis for a New Software Wave.



Shared Frame of Reference


LEARNING
COMPLEX COMMUNICATION
EMOTION
CONCEPTUALIZATION
INTUITION


COLLABORATIVE SYSTEMS: THE COMPUTER AGENT
FAST PARALLEL REASONING
DETAILLED KNOWLEDGE
CONTINUOUS AVAILABILITY

CADRC
CAD Research Center

CAL POLY

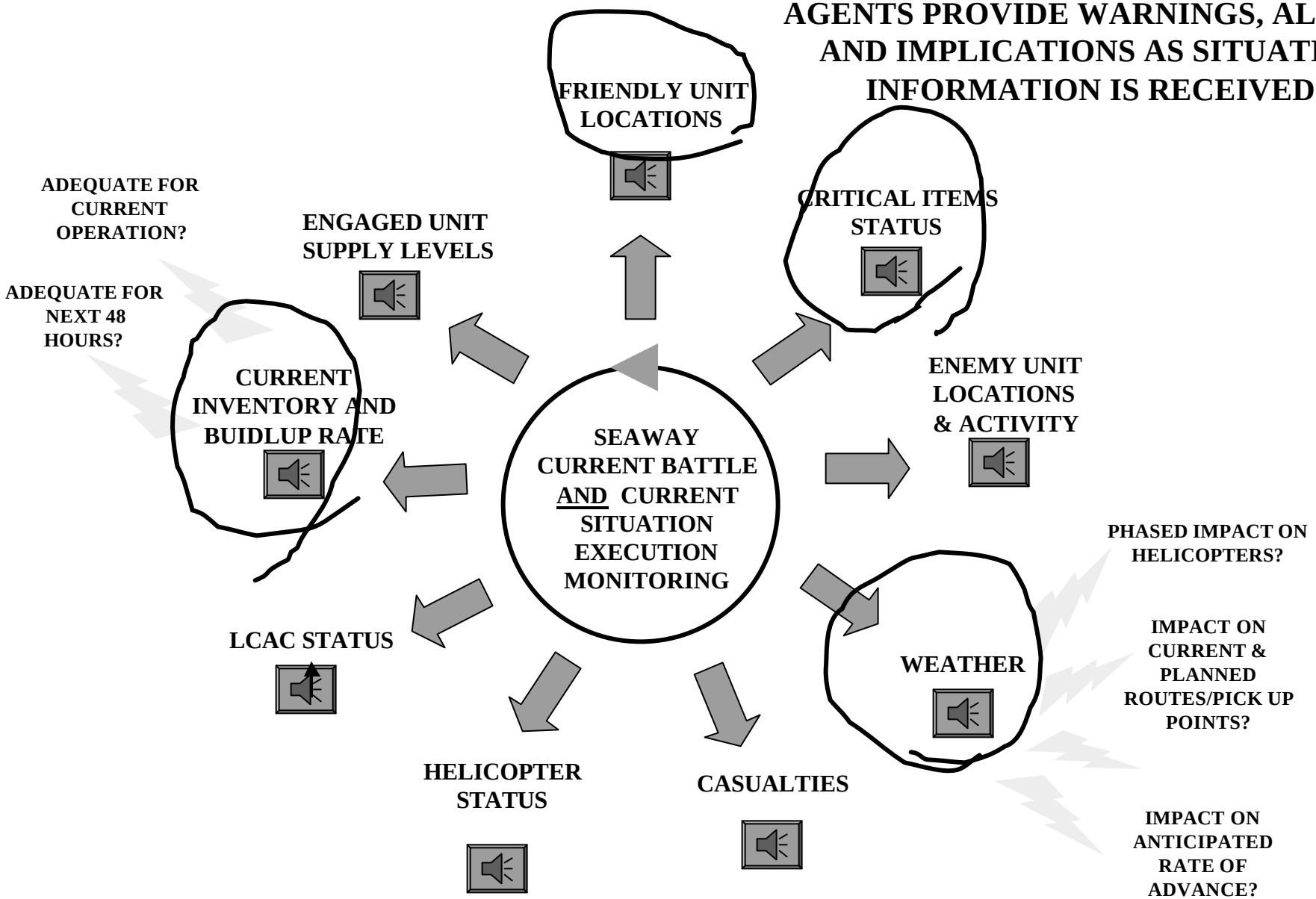
What Computers Can Do!

COMPUTER-BASED AGENTS CAN:

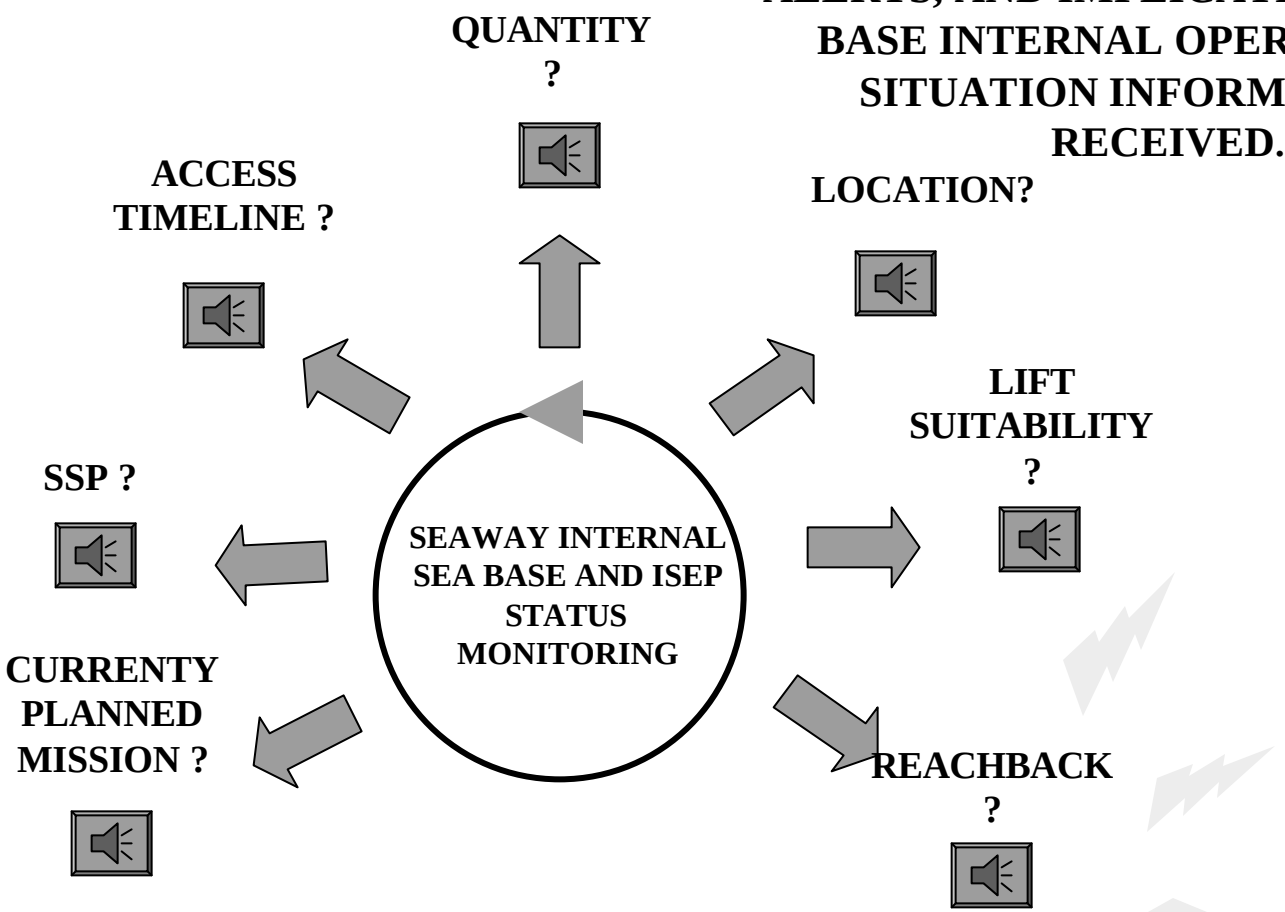
- COMMUNICATE WITH OTHERS AND USERS
- MONITOR EVENTS
- REASON ABOUT AVAILABLE INFORMATION
- RETREIVE INFORMATION FROM EXTERNAL SOURCES
- HOLD DEEP KNOWLEDGE IN NARROW DOMAINS
- REQUEST AND PROVIDE EXPERT SERVICES
- PURSUE INTERESTS AND OBJECTIVES
- ACCOMPLISH LOW-LEVEL LEARNING TASKS

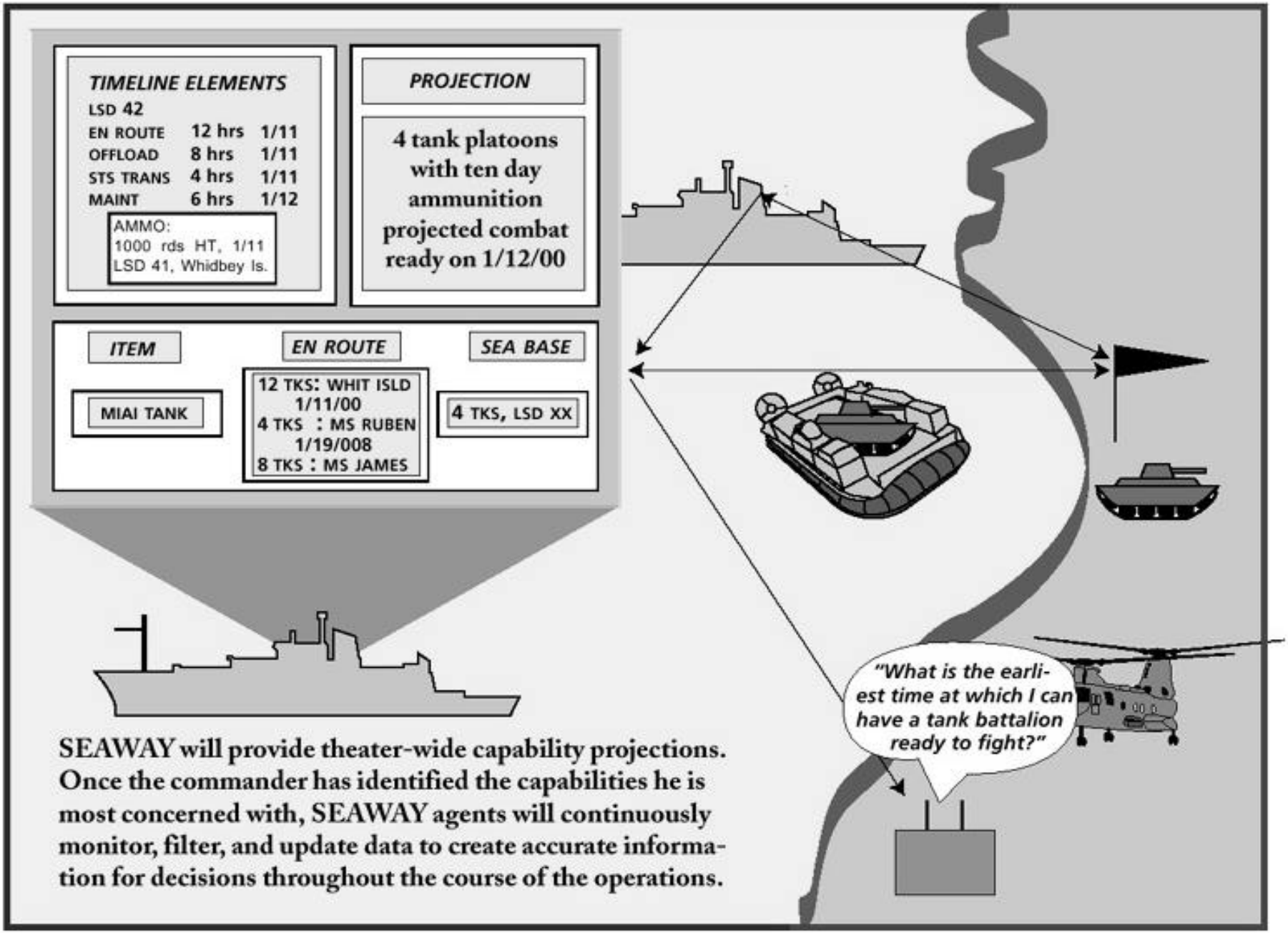
CDM TECHNOLOGIES INC

AGENTS PROVIDE WARNINGS, ALERTS, AND IMPLICATIONS AS SITUATION INFORMATION IS RECEIVED.

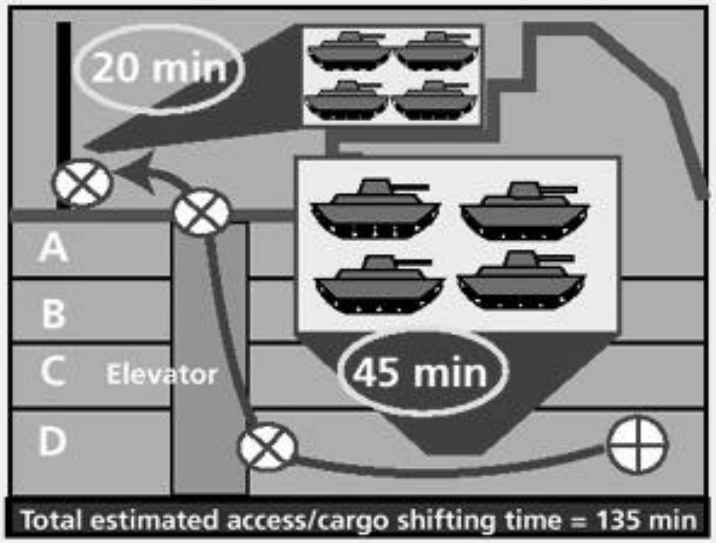


AGENTS ALSO PROVIDE WARNINGS, ALERTS, AND IMPLICATIONS FOR SEA BASE INTERNAL OPERATIONS AS SITUATION INFORMATION IS RECEIVED.





SEAWAY will provide theater-wide capability projections. Once the commander has identified the capabilities he is most concerned with, SEAWAY agents will continuously monitor, filter, and update data to create accurate information for decisions throughout the course of the operations.



Planning access, developing timelines, and "rippling" the basic offload plan is not enough. A modern system should quickly define impacts in terms of concequences resulting from each proposed course of action. SEAWAY will provide this function and allow a degree of "customization" by the user.

MISSION	DEST	ARR	CRAFT	ORIG	START	PRIOR
#1	RDBCH	0900	LCU 1	BOBO	0615	R
#1A	*1/2*	*0915*	*LCAC1*	*WHDID*	*ASAP*	*I*
#2	CANX					
#3	1/2	0930	PCSWY1	BOBO	0815	R

CRAFT	MIS#	CURLOC	DEST/ETA	STATUS	NEXT	PRIOR
LCU 1	#1	RDBCH	RDBCH/0900	OFLD	REUBEN	R
LCAC1	*#1A*	*PP#1*	*1/2/0915*	*ENR*	*BOBO*	*I*
PCSWY1	#3	BOBO	1/2/0930	LDG	HAUGE	R
Dog22	*#3A*	*SP1*	*1/2/0905*	*ENR*	*WHDID*	*I*

TYPE	TOT	FMC	NMC/CAUSE	CURLOC	FMC/ETA	24FC
LCAC	6	5	1/MAINT	WHDID	160900	6
PCSWY	8	7	1/ASSY	BOBO	152300	7
CH46	6	4	2/MAINT	ESSEX	162400	4
CH53E	3	3				
LCU	5	5				

COURSES OF ACTION : CONSEQUENCES & IMPACTS

COA #1:

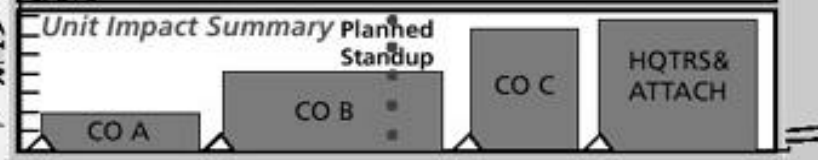
Mission	Dest/Plan ETA	Effect	New ETA
#4	1/2/0955	Delay	1200
#5			
#6			

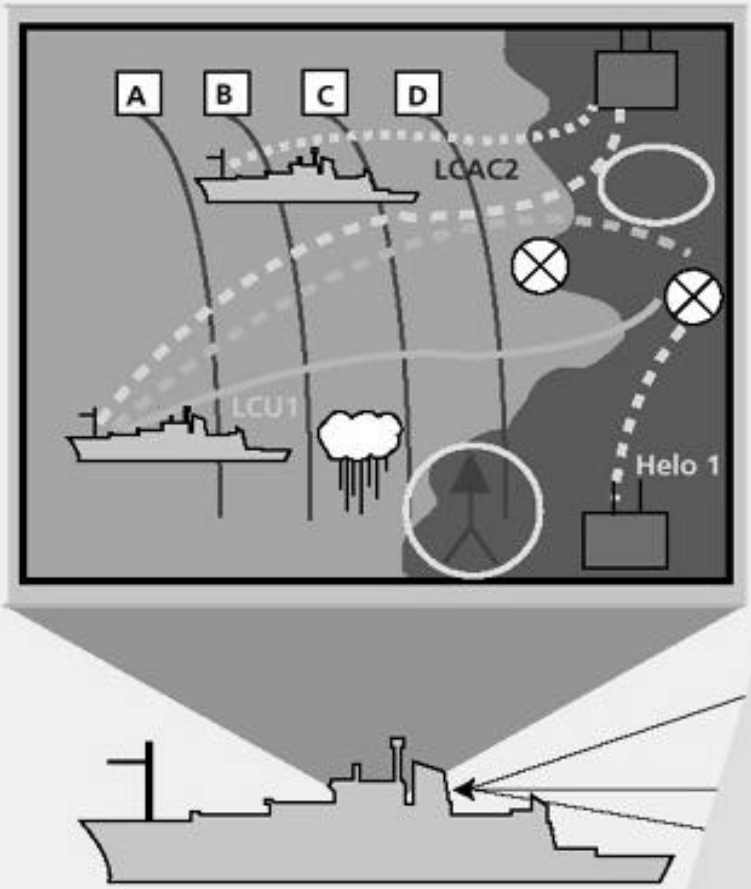
IMPACT SUMMARY:

A. Six 1/2 missions delayed over six hours. Principal equipment (1) water purification, earth moving, indirect fires (120mm mortar).

B. 2 wing missions delayed 12 hours. Principal equipment: yellow gear, intermediate maintenance vans (3).

C. ETC





Different "views" can be created by the user. Once created, agents will maintain the views and make the latest status and information available whenever tasked. "Emergencies" are common in operations. Agents can integrate the "emergency" request and make recommendations for adjustment of the plan to redistribute assets according to priorities.

MISSION	DEST	ARR	CRAFT	ORIG	START	PRIOR
#1	RDBCH	0900	LCU 1	BOBO	0615	R
#1A	*1/2*	*0915*	*LCAC1*	*WHDID*	*ASAP*	*I*
#2	CANX					
#3	1/2	0930	PCSWY1	BOBO	0815	R

CRAFT	MIS#	CURLOC	DEST/ETA	STATUS	NEXT	PRIOR
LCU 1	#1	RDBCH	RDBCH/0900	OFLD	REUBEN	R
LCAC1	*#1A*	*PP#1*	*1/2/0915*	*ENR*	*BOBO*	*I*
PCSWY1	#3	BOBO	1/2/0930	LDG	HAUGE	R
Dog22	*#3A*	*SP1*	*1/2/0905*	*ENR*	*WHDID*	*I*

TYPE	TOT	FMC	NMC/CAUSE	CURLOC	FMC/ETA	24FC
LCAC	6	5	1/MAINT	WHDID	160900	6
PCSWY	8	7	1/ASSY	BOBO	152300	7
CH46	6	4	2/MAINT	ESSEX	162400	4
CH53E	3	3				
LCU	5	5				

In this set of user created "views," both the plan and current execution status are observable. An unplanned "immediate mission" has been received from forces ashore and inserted by the agents who will then adjust remaining missions and report the opportunity costs of doing so in terms set by the user.

SEAWAY CONTRIBUTIONS

- **TRANSPARENT LOGISTIC PLANNING**
- **MULTI-LEVEL DISTRIBUTED ACCESS WITH A SUITE OF COORDINATING TOOLS**
- **GENERATION OF OFFLOAD EXECUTION PLANS**
- **GENERATION OF FUTURE OFFLOAD ALTERNATIVES**
- **GENERATION OF NRT CHANGES IN THE OFFLOAD PLAN**
- **RAPID ASSESSMENT OF A PLAN'S FEASABILITY**
- **CONTINUOUS CRITICAL ITEM MONITORING & ALERTS**
- **GENERATION OF LCAC & HELO DELIVERY ROUTES**
- **NRT THREAT WARNINGS AND IMPLICATIONS**
- **GENERATION OF ALTERNATIVE HELICOPTER AND LCAC ROUTES**
- **HULL LOCATION AND GENERATION OF ITEM ACCESS TIMELINES**
- **SUPPLY ITEM MONITORING WITH WARNINGS AND PLAN IMPLICATIONS**
- **CONTINUOUS THEATER AND AOA LOGISTIC PICTURE UPDATES**
- **CONTINUOUS UPDATES OF SEA BASE/ISEP SUPPLY PICTURE**

SEAWAY: ADAPTIVE COMMAND AND CONTROL

ADAPTS TO THE USER

ADAPTS TO ANY TYPE OF MARITIME SUPPORT OPERATION

ADAPTS PLANNING AS EXECUTION DEMANDS

ADAPTS TO FUTURE CHANGE

ADAPTS TO LEGACY SYSTEMS

HARNESSES ALL PROCESSES TO THE DEMANDS OF THE JOINT FORCE

COORDINATES SEABASE AND JLOTS OPERATIONS

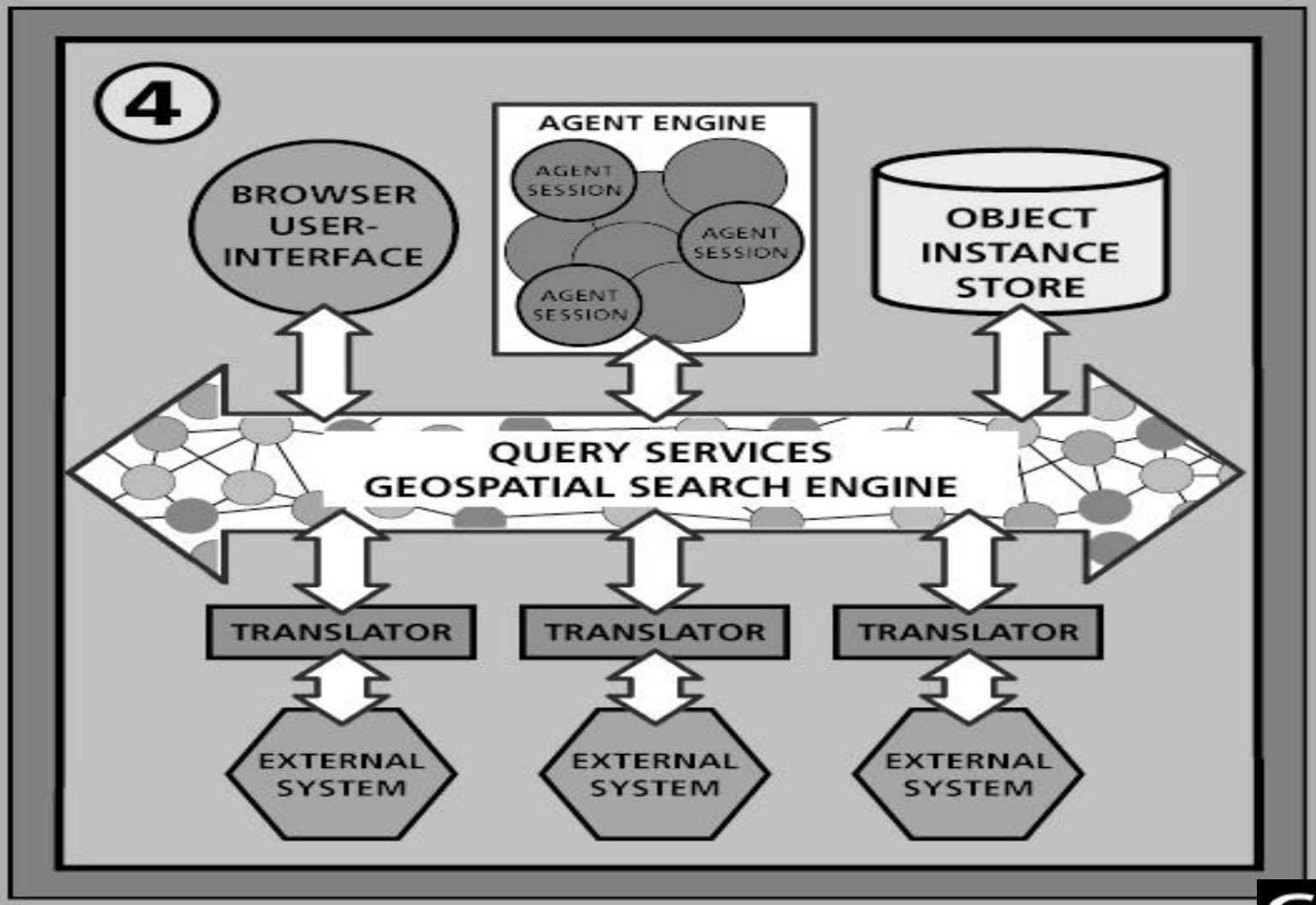
DISTRIBUTED FOR SIMULTANEOUS COLLABORATION

APPLICABLE AT MULTIPLE LEVELS AND ORGANIZATIONS

CADRC
CAD Research Center

CAL POLY

Requirements for Intelligent Decision-Support



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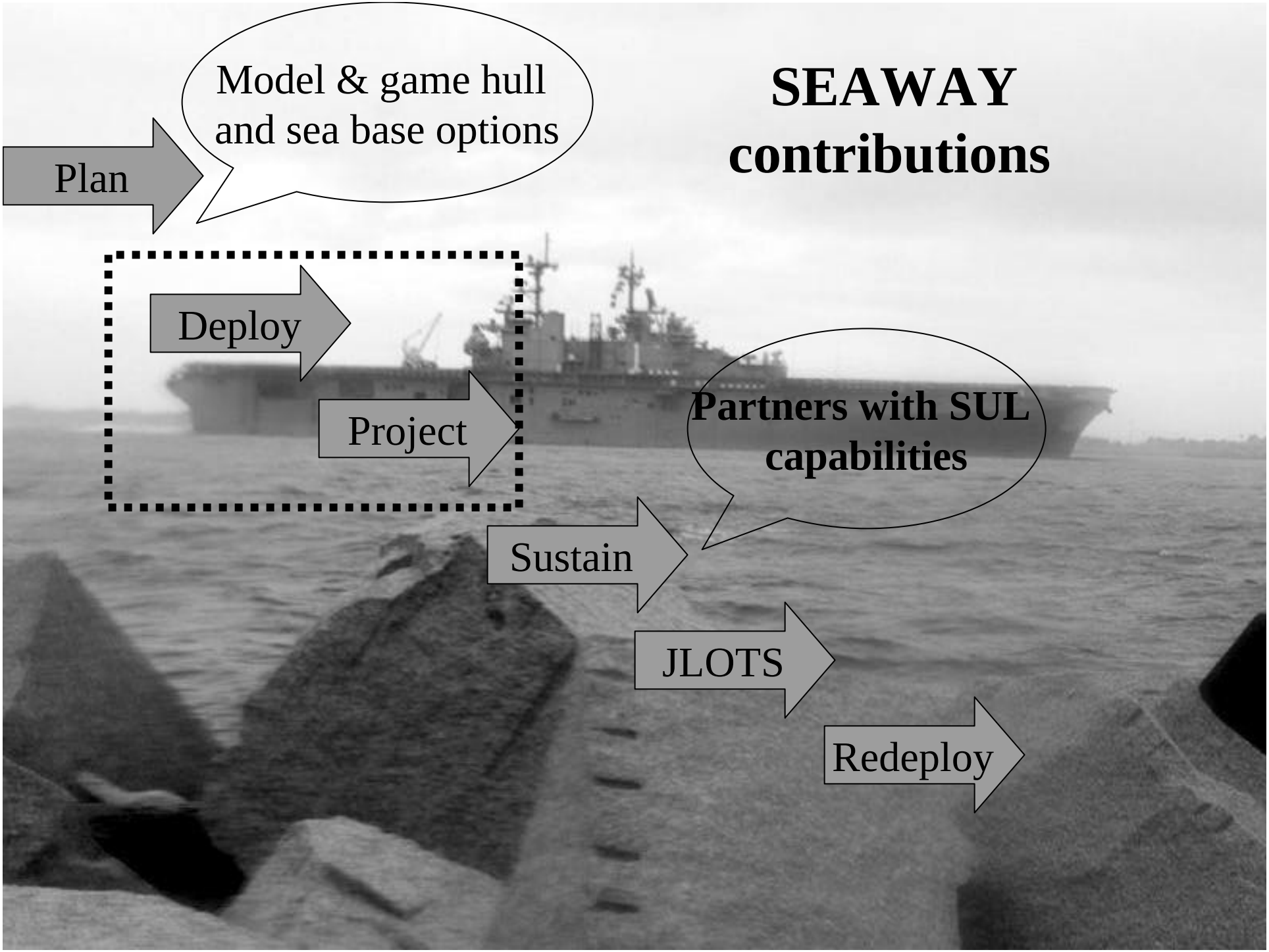

SEAWAY contributions